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Memorandum

~~Administrative~~

NHTSA-2002-13678-1

Subject: ACTION: Final Regulatory Evaluation
Tire Safety Information, FMVSS No. 139

Date: OCT 17 2002

From: *Rose McMurray*
Rose McMurray
Associate Administrator
for Planning, Evaluation, and Budget

Reply to
Attn. of:

To: Docket

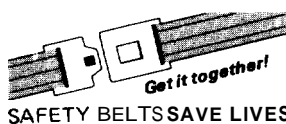
Thru: Jacqueline Glassman *by NEB*
Chief Counsel

Please submit the attached "Final Regulatory Evaluation, Tire Safety Information, FMVSS
NHTSA-02-13678
139" to the appropriate docket.

Attachment

cc:
Associate Administrator for Rulemaking
Associate Administrator for Enforcement
Chief Counsel

#





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Final Regulatory Evaluation

TIRE SAFETY INFORMATION

FMVSS No. 139

*Office of Regulatory Analysis and Evaluation
Plans and Policy
July 2002*

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EXECUTIVE SUMMARY

Tire maintenance is crucial in the proper handling of a motor vehicle, and also contributes to better fuel economy, ride characteristics, and tire life. However, all too often, proper tire pressure is not maintained because of a lack of knowledge on the part of the consumers. One purpose of the TREAD Act is to reverse this trend by making tire relevant information more lucid and accessible.

Specifically, Section 11 of the TREAD Act requires the Secretary of Transportation to initiate a rulemaking proceeding to improve the labeling of tires, with inflation levels and load limits as the key issues to address. In response, NHTSA is establishing a new federal standard, FMVSS No. 139, *New Pneumatic Tires for Light Vehicles*.

Briefly, in this rule, NHTSA is requiring that a full tire identification number (TIN) be placed on the intended outboard side and either a full TIN or a partial TIN be placed on the intended inboard side. A vehicle placard and/or tire inflation pressure label will be required that displays such pertinent tire information as recommended cold tire inflation pressure, original tire size, and vehicle capacity weight. Lastly, the owner's manual shall be updated to provide better tire maintenance and care information, and terminology and definitions.

NHTSA estimates the costs for tire and TIN changes will be up to **\$23.4** million or up to \$0.08 per tire during the phase-in period, and will decrease to near zero in the long run. The costs for changes to the placard and label will be about \$0.04 per label, and the cost

to update and revise the owner's manual is estimated to be \$0.11 per vehicle. These costs are spread across an estimated fleet of 17 million vehicles, with \$2.6 million estimated to be recurring on an annual basis and a total initial cost of up to **\$26** million.

The agency could not quantify the benefits of this final rule, but believes that it will have a definite influence on the driving population. Requiring a TIN on both sides of the tire will aid consumers dramatically in the event of a recall, even if the tire is mounted with the intended outboard side on the inside. **Also**, having a standardized location and format where tire pressure and loading information can be found will greatly enhance consumer awareness regarding tire maintenance and usage.

I. INTRODUCTION

The Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act of 2000, required that the National Highway Traffic Safety Administration (NHTSA) establish a new Federal Motor Vehicle Safety Standard (FMVSS) whose focus is on tire labeling requirements. The Notice of Proposed Rulemaking set out in 66 FR 65536 [docket #NHTSA-2001-11157-1, December 19, 2001] proposed to establish a new federal standard—FMVSS No. 139, *New Pneumatic Tires for Light Vehicles*, under Title 49 of the Code of Federal Regulations (CFR)—to address and update tire labeling requirements. In addition, it would contain revisions to its current regulations to improve tire information for light vehicles¹ and light vehicle tires, and its availability and ease of understanding to consumers. The new standard will also contain requirements addressing various aspects of tire performance. This economic evaluation is concerned with the costs incurred due to proposed requirements and inclusion/exclusion of information based on need and effectiveness.

¹ As used in this document, “light vehicles” are vehicles with a gross vehicle weight rating (GVWR) of 10,000 pounds or less and excludes motorcycles and low speed vehicles (LSV’s).

11. CURRENT LABELING REQUIREMENTS

A. TIRE SIDE WALL LABELING

NHTSA's existing labeling requirements for new passenger car tires are set forth in FMVSS No. 109 (49 CFR §571.109)—*New Pneumatic Tires* (for Passenger Cars). Specifically, **S4.3** of No. 109 sets forth informational labeling requirements for tires. Required information includes, size designation, maximum permissible inflation pressure, maximum load rating, generic name of each cord material used in the plies, actual number of plies in the sidewall and tread area (if different from each other), the words “tubeless” or “tube type” as applicable, the word “radial” if the tire is a radial ply type, “DOT” certification symbol, manufacturer, and week and year of manufacture.

NHTSA's labeling requirements for retreaded passenger car tires are set forth in FMVSS No. 117 (49 CFR §571.117)—*Pneumatic Retreaded Tires*. FMVSS No. 117 requires that each newly retreaded passenger car tire have molded into its sidewalls information similar to that required in FMVSS No. 109, plus additional information to assist retreaders.

Labeling requirements for new tires for vehicles other than passenger cars are set forth in FMVSS No. 119 (49 CFR §571.119)—*New Pneumatic Tires for Vehicles other than Passenger Cars*. The requirements include the certification symbol “DOT,” retreadable tire if applicable, the tire identification number (includes the week and year of manufacture), tire size designation, maximum load rating and corresponding inflation

pressure, speed restriction of the tire, number of plies in sidewall and tread, the words “tubeless” or “tube type” as applicable, the word “regroovable” if the tire is designed for regrooving, the word “radial” as applicable, and tire load range designation.

B. TIRE IDENTIFICATION NUMBER (TIN)

Section 574.5 of Title 49, CFR —Tire *Identification* Requirements —sets forth the methods by which new tire manufacturers and new tire brand name owners must identify tires for use on motor vehicles. The section also sets forth the methods by which tire retreaders and retreaded tire brand name owners must identify tires for use on motor vehicles. The purpose of these requirements is to facilitate efforts by tire manufacturers to notify purchasers of defective or nonconforming tires and, by such purchasers, to identify those tires so that purchasers can take appropriate action in the interest of motor vehicle safety.

Specifically, 9574.5 requires each new tire manufacturer and each tire retreader to mold a TIN into or onto the sidewall of each tire produced, in the manner and location specified in the section and as depicted in Figures 1 and 2 of that section. The TIN is composed of four groups:

1. The first group represents the manufacturer’s identification mark assigned to such manufacturer by this agency in accordance with 9574.6;
2. The second group represents the tire size for new tires; for retreaded tires, the second group represents the retread matrix in which the tire was processed or, if no matrix was used, a tire size code;
3. The third group may, at the option of the manufacturer, be used as a descriptive code for identifying significant characteristics of the tire. If the tire is produced

for a brand name owner, the third grouping must identify such brand name owner; and

4. The fourth group identifies the week and year of manufacture. The first two figures identify the week, starting with “01” to represent the first full week of the calendar year; the second two figures represent the year. For example, “2198” represents the 2^{1st} week of 1998.

C. VEHICLE LABELING

Labeling requirements are also contained in 49 CFR 567—*Certification*, 49 CFR 575 — *Consumer Information Regulations*, FMVSS No. 110—*Tire Selection and Rims*, applicable to passenger cars and to non-pneumatic spare tire assemblies for use of passenger cars, and FMVSS No. 120—*Tire Selection and Rims ~~for~~ Mot/or Vehicles other than Passenger Cars*.

Section 567.4 requires vehicle manufacturers to affix to each vehicle a label bearing, among other things, the gross vehicle weight rating (GVWR), which must be greater than the sum of the unloaded vehicle weight, rated cargo load, and 150 pounds times the vehicle’s rated seating capacity; the gross axle weight rating (GAWR), which is the value specified by the manufacturer as the load carrying capacity of a single axle system.

Paragraph S4.3 of FMVSS No. 110 requires manufacturers to affix a placard to each passenger car’s glove compartment or an equally accessible location showing the vehicle’s capacity weight, designated seating capacity, the manufacturer’s recommended tire size designation, and, for a vehicle equipped with a non-pneumatic spare tire assembly, the non-pneumatic identification code required by FMVSS No. 129—*New*

Non-Pneumatic Tires for Passenger Cars. The required information is intended to promote the vehicle's safe performance by preventing overloading of the tires of the vehicle itself.

FMVSS No. 120 requires that each vehicle show, on the label required by **§ 567.4**, or on a tire information label (**S5.3.2(b)**), the recommended tire size designation appropriate for the GAWR, the size and type designation of rims appropriate for those tires, the recommended cold inflation pressure for those tires, and the recommended cold inflation pressure for those tires such that the sum of the load ratings of the tires on each axle (when the tires load carrying capacity at the specified pressure is reduced by dividing 1.10, in the case of a tire subject to FMVSS No. 109, that is, a passenger car tire) is appropriate for the GAWR.

III. PROPOSED MODIFICATIONS IN THE NPRM

The proposed amendments address the following aspects of tire and vehicle labeling:

- tire markings,
- Tire Identification Number (TIN),
- vehicle placard content and format,
- placard location, and
- owner's manual information.

The proposal would also extend all passenger car labeling requirements—including those requiring the labeling of combined occupant and cargo weight capacity and designated seating positions—to light trucks and multipurpose passenger vehicles (MPV's) with a GVWR of 10,000 pounds or less.

A. TIRE MARKINGS

In the NPRM, **NHTSA** proposed that the TIN, size designation, maximum permissible inflation pressure, and maximum load rating be placed on both sides of light vehicle tires.

The impetus for this proposal stems from the Firestone tire recalls of 2000, which highlighted the difficulty that consumers had in determining whether their tire was subject to a recall when the tire was mounted so that the sidewall bearing the TIN and size designation faced inward, concealed by the vehicle's wheel well. Requiring the TIN and size designation to be on both sides would ensure that certain required information would be on the sidewall facing outward, regardless of how the tire is mounted.

Requiring that the other items of information be on both sidewalls would aid consumers in maintaining their tires and properly loading their vehicles.

B. TINADJUSTMENTS

In the NPRM, NHTSA proposed two (2) changes to the TIN:

1. The agency proposed to require a re-ordering of information in the TIN so that the first six (6) characters would contain the information required for determining whether a particular tire is subject to a recall:
 - the first two (2) characters would reflect the plant code
 - the next four (4) characters would indicate the date code
2. The agency proposed to require that each character be 6 mm (1/4") high. The agency believes that a requirement for a uniform TIN font size would significantly improve the legibility of the TIN.

C. VEHICLE PLACARD AND TIRE INFLATION PRESSURE LABEL

The agency proposed four (4) sets of revisions for the presentation of tire inflation pressure and load limit information on the vehicle placard currently required for passenger cars by **S4.3** of §571.110 and to be required for all light vehicles with a GVWR of 10,000 pounds or less under this final rule. The current standard has the placard permanently affixed to the glove compartment door or an equally accessible location, displays the current vehicle capacity weight, the designated seating capacity (expressed in terms of total number of occupants and distribution of occupants for each seat location), the vehicle manufacturer's recommended cold tire inflation pressure for maximum loaded vehicle weight, and the manufacturer's recommended tire size designation.

1. The agency proposed that tire inflation pressure information would be visually separated by a red colored border on the vehicle placard or, alternatively, be placed on a separate tire inflation pressure label. The vehicle placard would contain only the information required by the proposed information specified in the current version of **S4.3** (paragraphs (a) to (e))². The vehicle placard would also meet the proposed color and content requirements as discussed below in (2) and (3).
2. The agency also proposed that the vehicle placard³ and tire inflation pressure label⁴ meet the following three requirements (see Figures 1 and 2 in Appendix):
 - i. the tire inflation pressure information on the placards would be in color—red, yellow, and black on a white background,
 - ii. contain a black and white tire symbol icon in the upper left corner of the placard/label and should measure at least 13 millimeters (0.51 inches) wide and **14** millimeters (0.55 inches) high, and
 - iii. the placard and label would both include the phrases “Tire Information” and “See Owner’s Manual For Additional Information” in yellow text on a black background.
3. The agency proposed to replace the vehicle capacity weight statement on the vehicle placard with the following sentence: “the combined weight of occupants and cargo should never exceed **XXX** pounds.” The “**XXX**” amount would equal the “vehicle capacity weight” of the vehicle as defined in S4.3(a) of FMVSS 571.110. The information is the same as that currently required to be placed on the vehicle placard by manufacturers. However, the agency believes that the statement, “The combined weight of occupants and cargo should never exceed

² §571.110, S4.3 **Placard**. A placard, permanently affixed to the glove compartment door or an equally accessible location, shall display the (a) Vehicle capacity weight; (b) Designated seating capacity; (c) Vehicle manufacturer’s recommended cold tire inflation pressure for maximum loaded vehicle weight and, subject to the limitations of S4.3.1, for any other manufacturer-specified vehicle loading condition; (d) Vehicle manufacturer’s recommended tire size designation; (e) For a vehicle equipped with a non-pneumatic spare tire assembly, the non-pneumatic tire identification code with which that assembly is labeled pursuant to the requirements of S4.3(a) of §571.129, *New Non-Pneumatic Tires for Passenger Cars*; and (f) See owner’s manual for additional information.

³ “Vehicle Placard” (or just “placard”), as used in this document, refers to an indicator that contains information about the vehicle pertinent to tire maintenance and safety, such as seating capacity, vehicle capacity weight. However, it may or may not contain specific information about the tire, such as the tire location, size, cold tire pressure, and so on.

⁴ In the event that the “Vehicle Placard” lacks tire specific information, a “Tire Inflation Pressure Label” (or simply “label”), would be applied to inform consumers of the proper cold tire pressure, original installed tire size, etc.

XXX.”, is easier for consumers to comprehend than a technical phrase such as “vehicle capacity weight.”

NHTSA proposed to replace the vehicle’s recommended tire size designation with the tire size designation of the tire installed as original equipment by the vehicle manufacturer.

While in most instances these two numbers would be identical, this minor revision insures that the consumer is provided with the correct tire inflation pressure information for the tire size actually installed on the user’s vehicle as original equipment by the manufacturer.

NHTSA proposed these placard changes in response to survey data which indicate that consumers need assistance in locating recommended tire pressures for their vehicle’s tires and understanding load limits. The use of colors and a visual cue, such as a tire symbol icon, would aid drivers in noticing and locating this imperative information. By expressing the vehicle’s load limit in easily recognizable terms such as “passenger and cargo weight”, as opposed to “vehicle capacity weight”, the proposed placard revisions would also aid consumers in understanding and adhering to load limit guidelines.

D. PLACARD PLACEMENT

The agency proposed that the placard or placard and label containing tire information pressure by tire size and other required information specified in **S4.3** of FMVSS 571.110 be located on the driver’s side B-pillar. If a vehicle does not have a B-pillar, then the placard or placard and label would be placed on the edge of the driver’s door (the area between the door latch and door jam). Currently, S4.3 of 571.110 specifies that the

vehicle placard be affixed to the glove compartment door or an equally accessible location. A standardized location for the tire information placards and labels would contribute to consumer awareness of recommended tire inflation pressures and load limits.

E. OWNER'S MANUAL

The agency proposed that the owner's manual for light vehicles contain a discussion of the following five subject areas:

1. Tire labeling,
2. Recommended tire inflation pressure,
3. Glossary of tire terminology,
4. Tire care, and
5. Vehicle loading limits.

A single, reliable source containing this information for the tires and tire safety information listed above would aid consumers by providing to them, in one centralized location, the information that they need to properly maintain their tires and adhere to recommended load limits.

Finally, the agency proposed revising,

- FMVSS No. 110 [49 CFR 571.110, *Tire selection and rims* for passenger cars] and No. 120 [49 CFR 571.120, *Tire selection and rims ~~for~~ motor vehicles other than passenger cars*] to reflect the applicability of the proposed light vehicle tire standard to vehicles with a GVWR of 10,000 pounds or less;
- No. 117 [49 CFR 571.117, *Retreaded pneumatic tires*] and No. 129 [49 CFR 571.129, *New non-pneumatic tires for passenger cars*] to replace the labeling requirements contained therein with those specified in the proposed new light vehicle tire standard.

IV. DOCKET COMMENTS TO NPRM

NHTSA received about 30 docket submissions to the December 19, 2001 NPRM. The commenters included private citizens, international bodies, various trade associations representing manufacturers, consumer advocacy groups, and automobile and tire manufacturers. The comments are summarized below. A listing of the full names of the referenced commenters and can be found in Appendix A (p. 65), along with their corresponding docket number. Also, any acronyms throughout this document can be found in Appendix B (p. 66).

A. TIRE MARKINGS

1. MAXIMUM PERMISSIBLE INFLATION PRESSURE

CU, GM, DC, ITRA/TANA support maintaining the maximum inflation pressure on the tire sidewalls to prevent over inflation and to provide a level of inflation that is not a durability concern. CU and DC also suggest adding additional wording to the sidewall to direct one to the vehicle placard or owner's manual to the recommended inflation pressure.

RMA, JATMA, Ford, and GRRF support removing the maximum inflation pressure from the sidewall labeling. JATMA and Ford state that different inflation pressures indicated by tire and vehicle manufacturers will cause confusion and Ford recommends that the maximum inflation pressure information should be replaced with "See Vehicle Placard for Recommended Tire Pressure." RMA and GRRF believe that the revised vehicle placard and owner's manual information is a better way of communicating correct

inflation pressure and removal would encourage users to seek out the correct inflation pressure.

2. MAXIMUM LOAD RATING

RMA, GRRF, JATMA, and ETRTO suggest that the maximum load rating is of no use to consumers and that it be replaced by a load index as the best way for the consumer to choose a suitable replacement tire for the vehicle. **RMA** notes that the proposed maximum combined weight limit statement to be added to the vehicle placard will help consumers safely manage their vehicle/tire load capabilities.

3. CORD MATERIAL AND NUMBER OF PLIES

RMA, JATMA, and ETRTO suggest that cord material and number of ply information should not be required because they are of no safety benefit to consumers. RMA also notes that elimination of these labeling requirements for light vehicle tires will simplify sidewall appearance and provide for better communication of essential information and that this information is not critical to the repair, retread, or recycling of passenger car tires which are rarely retreaded today. RMA notes that type and number of plies may be useful for retreading purposes for LT tires and JATMA notes that this information is relevant for consumers purchasing rayon carcass tires.

ITRA/TANA believe it is important to leave that information on both sidewalls of the tire for the retread, repair, and recycling industries. This information enables the retreader or repair technician to select the proper repair materials or procedures for retreading or repairing the tires. Also, if information regarding the number of plies and cord material

is removed from the sidewall, technicians cannot determine if the tire has a steel cord sidewall. This information is critical when determining if the tire is a candidate for a zipper rupture and very important in normal handling by a tire technician.

4. SPEED RATING AND LOAD INDEX (SERVICE DESCRIPTORS)

The Alliance suggests that the tire sidewall labeling for tire speed rating and load index be allowed. RMA and Volkswagen state that the agency should require the service description to become part of the tire size information to be placed on the tire sidewall for consumer reference when ordering replacement tires. RMA states that tires are universally labeled with the service description, as illustrated on the agency's proposed tire information placard and label and that it is very easy for consumers to match the recommended service description on there with the service description on replacement tires. RMA also notes that for individuals who might want to see the correlation of load index numbers to pounds and kilograms, simple charts could be included in owner's manuals or made available through tire dealerships and web sites.

5. SECONDTIN

CU, Charlie West, Ford, and CIMS agree with the agency that improved access to the TIN would enhance a customer's ability to determine whether their tires are covered by a recall or customer satisfaction campaign. CIMS adds that the only realistic way to determine if tires are recalled is to locate a dealer who is willing to inspect the tires by putting the vehicle on an overhead lift and adjusting all four tires to read the TIN.

RMA, JATMA, ITRA/TANA, RAC, and GRRF oppose the agency mandating that the TIN be required on both sidewalls of a tire for the following reasons:

1. The current practice in the tire industry is to have the TIN located in the front aspect of the bottom half of the mold so that workers can change the weekly date code with reasonable safety without having to climb into a 350°F upper press. To change the date code in an upper press, a manufacturer would require the physical removal of the mold from the press in order to comply with OSHA regulations, which would result in up to eight hours of downtime per press per week;
2. The initial costs to modify all 101,148 molds for the addition of the second TIN code will cost an estimated \$113.5 million. The annual recurring costs of changing the second TIN due to labor and downtime is estimated at \$224.1 million per year. Further there is insufficient global mold shop capacity to accomplish such a modification in the specified time;
3. The addition of the second TIN is a matter of very occasional convenience, not directly affecting tire safety. Also, no other auto products/parts require a part/serial number on both sides or in more than one location;
4. The TIN is only necessary once the user has established whether a particular manufacturer's tire and size designations are subject to recall.

RMA suggests the following alternatives to the agency's proposal:

1. Require a partial TIN (manufacturer's identification, tire size, and optional information except the weekly date code) on the opposite sidewall from the regular TIN;
2. Require the TIN on only one side of the tire and also show the TIN for the original equipment tires in an appropriate section of the vehicles owner's manual by means of an adhesive label;
3. Require placement of the TIN on the intended outboard side of P-metric and LT tires as indicated by the tire manufacturers.
4. Marking the TIN on one sidewall could be accompanied by a requirement to identify which way the tire is to be fitted;

Lastly, Specialty Tires of America and Coker Tire request that specialty tires, e.g., bias-ply and tires for classic and antique cars, be excluded from the requirements to mark the

TIN on both sides of the tire. Coker notes that the process of producing a tire that contains a wide whitewall involves grinding a large section of the sidewall, which would result in removal of the TIN.

B. TIN ADJUSTMENTS

1. REORDERING OF THE TIN

Except for CU, all commenters objected to the rearrangement of the TIN. The Alliance, Honda, RMA, ITRA/TANA, CIMS, ETRTO, RAC, and GRRF requests that NHTSA maintain the current TIN groupings, format, and order for the following reasons:

1. A reordering of the TIN would confuse consumers and would require NHTSA to launch a new tire information campaign;
2. A reordering of the TIN would confuse consumers because tires would be in circulation, for up to 12 years, with two different TIN code sequences;
3. High costs due to need to rework tire molds, retrain dealership personnel, revise printed materials, and revise databases;
4. The agency's proposed requirements for owner's manual information will not necessarily improve consumer knowledge about TIN groupings;
5. The three-digit plant code (instead of two characters for a new tire) for retreaders could not be accommodated in the newly ordered TIN;
6. The proposed positioning of the date code will not conform to foreign regulations and will be contrary to the spirit of international harmonization.

2. HEIGHT OF TIN

Advocates does not support the agency's proposal to require each character of the TIN to be 6 mm or ¼" high because they state that it is a capricious choice and that the agency has not gathered information on the readability of this height of low characters.

Additionally, they repeat their concern with this character size for individuals with contrast sensitivity function (CSF).

CU, RMA, ITRA/TANA support the proposed TIN height of 6 mm. However, GRRF notes that the proposed TIN height is not consistent with the draft GTR proposed height requirements.

C. VEHICLE PLACARD

1. CONTENT

ITRA/TANA commend NHTSA for its proposal and believe that all of these changes will help consumers better understand their tire pressure requirements and load limits. **RMA** supports the proposed content, layout, and placement of placard, including both options. RMA also states that the agency should require a service description (load index and speed rating) as part of the tire size information shown on the vehicle placard and tire inflation pressure label because the information is important to consumers and provides the agency an opportunity for global harmonization of tire regulations.

The Alliance, MMC, GM, Volkswagen, and Subaru state that vehicle manufacturers should be allowed to provide tire information in addition to the required fields to accommodate different speed and loading conditions, sales practices, tire/rim optional equipment, and more than one set of recommended tire pressures. The Alliance also states that it is common practice to exchange tires and wheels between vehicles in a dealership's inventory and application of labels with original tire sizes listed would be

difficult to distribute so different tire sizes should be listed on the placard. Subaru suggests permitting an additional optional tire size label or notation on the placard to indicate consumers to refer to the owner's manual for optional tire size tire information.

2. FORMAT

The Alliance supports the option to provide a single placard with all required information and recommends that—based upon limited space available for the location requirements—if a manufacturer opts to provide tire pressure on a stand-alone label, the manufacturer should be permitted to place the remaining information (seating capacity and loading) on the certification label because it already contains maximum loading capacity information for the vehicle and is required to be located in the driver's door area.

MMC and GM request that NHTSA not regulate placard, design, direction, and dimensions.

3. LOCATION

The Alliance, GM, and Honda suggest that the agency adopt the same location requirement that exists in Part 567.4, because flexibility is needed to accommodate vehicles that do not have a conventional B-pillar, do not have enough room on the B-pillar nor sufficient room on the driver's door edge, or vehicles which are driven on the right-hand side, such as postal trucks or other special-use vehicles. The Alliance also suggests that the agency include a provision that permits the manufacturer to place the

Part 567 certification label on the passenger side if both the required placard and certification label cannot be accommodated on the driver's side

Subaru states that it agrees with the agency that the placard should be on the B-pillar, preferably on the driver's side, and suggests that this be specified in the regulatory text. GRRF supports the agency's proposed location of the placard and label on the vehicle and the location of the placardlabel in relation to each other.

4. COLOR

The Alliance and GM oppose a multi-color requirement because it presents a significant cost burden, no apparent benefits, is not a caution or warning label, and the addition of color will not aid the consumer in locating information on the placard and/or label.

Volkswagen notes that it would need to institute separate production and processing of the placard and tire information label because its vehicle information labels are printed on sheets of material with a uniform background color and black print.

5. MULTISTAGE MANUFACTURER

The Alliance and NTEA suggests that the agency address issues related to vehicles that are manufactured in two or more stages and vehicles that are modified after primary manufacture. They state that the primary manufacturer, in many cases, will not have sufficient information regarding final configuration and vehicle equipment to designate seating capacity and weight limitations for occupants and cargo. In the event that

NHTSA determines that multistage manufacturers should label each truck with information concerning seating capacity and combined occupant and cargo weight rating, NTEA further requests that actual individual weighing not be required in order to properly certify the vehicle. Also, there should be provisions to allow for the update of such information, through removing or covering original information with a new label, to ensure that consumers are receiving current information.

D. OWNER'S MANUAL

CU supports the agency's proposals and rationale and suggests that it would be useful for consumers if manufacturers provided recommended optional tire size designations in the manual. Volkswagen suggests that owner's manual not be required to identify a specific tire size for the vehicle because owner's manuals are printed at the beginning of the production year and available tire sizes can change during the production cycle.

Volkswagen also notes that manufacturers should not be restricted from adding additional information to the owner's manual.

The Alliance urges the agency to develop tire and tire safety information with standardized language, which is to be provided with a vehicle as either a brochure or in the owner's manual.

Because of the various tire-wheel inflation combinations, GM recommends that the agency not require actual recommended inflation pressures in the owner's manual. **RMA** recommends that the owner's manual contain a discussion on the fact that correct tire

inflation is vehicle specific and not contained on the sidewall. RMA also suggests that the owner's manual should define "tire service description" and provides a suggested definition.

Honda and the Alliance recommend that vehicle manufacturers provide an explanation of the TIN in the owner's manual to achieve improved owner understanding.

V. NHTSA RESPONSE TO COMMENTERS AND FINAL RULE DISCUSSIONS

After careful consideration of the commenters' suggestions and point of view, the agency has established a final rule on the issue of tire labeling. This section mentions additional details regarding the final rule, but more importantly, discusses the agency's justification for or against commenters' suggestions and alternatives.

A. TIRE MARKINGS

1. MAXIMUM PERMISSIBLE INFLATION PRESSURE

Comments to the ANPRM, NPRM, and survey data noted that misunderstanding concerning the meaning of maximum permissible inflation pressure exists among consumers. Nevertheless, most commenters supported retaining this requirement.

Commenters also noted that the maximum inflation pressure provides a failsafe guideline for tire inflation. The agency concurs that the greatest likelihood of tire failure results from under inflation (rather than inflating up to the maximum pressure) and, therefore, the agency is not deleting or revising the requirement for the maximum permissible inflation pressure marking on the tire. This requirement will also be extended to tires for use on all light vehicles with a GVWR of 10,000 pounds or less, except for LSV's and motorcycles.

Several commenters suggested adding information to the tire to distinguish the maximum permissible inflation pressure from the recommended inflation pressure. The agency believes that adding supplementary language to the sidewall to clarify the distinction between maximum inflation pressure and recommended inflation pressure is not feasible.

Sidewall space is becoming progressively smaller with the advent of low profile and run-flat tires. Requiring additional information in this already cramped area will cause greater consumer confusion. The agency anticipates that improvements in the tire placard, standardizing the placard location, and an expanded consumer information program will reduce the number of consumers who mistake the maximum inflation pressure for the recommended inflation pressure.

2. MAXIMUM LOAD RATING

Several tire industry commenters suggested that the maximum load rating is of no use to consumers, especially in light of the load information to be contained on the vehicle placard and that it should be replaced by the load index requirement contained in GTS-2000 and ECE Regulations Nos. 30 and 54. The agency disagrees that the maximum load rating is of no use for consumers. The maximum load rating provides information that enables consumers to make informed decisions about loading conditions and towing capacity under certain vehicle applications. Therefore, NHTSA will continue to require the maximum load rating on tires. However, manufacturers are welcome to add the load index to the tire side wall.

3. CORD MATERIAL AND NUMBER OF PLIES

With regard to the number of plies and generic name of cord material used in the plies, most respondents believed that information to be of limited safety value to consumers and suggested its removal from the sidewall. However, ITRA/TANA expressed the view that the cord and ply material is very important to the tire retread, repair, and recycling

industries. This information enables consumers and industry professionals to determine the level of **risk** when inflating, repairing, retreading, or servicing a specific tire.

NHTSA believes that it is sufficient to require that this information appear on only one sidewall. Requiring that ply, cord, and tube type information only be present on one sidewall would reduce the stringency of FMVSS No. 119 (which currently requires that light truck and MPV tires display the information on both sidewalls) and would result in cost savings to manufacturers that would offset some of the increased costs resulting from changes to the TIN and the labeling of LT tires. Further, there is no known advantage or safety benefit that would arise from requiring this information on both sides of the tire. The foreseeable benefit of this information is for retreaders and other professionals that would work on tires after they have been removed from the vehicle, when both sides are easily viewable.

4. SPEED RATING AND LOAD INDEX

In contrast to the maximum load rating, the load index recommended by industry commenters does not provide a value that is intuitive to consumers and would require a vehicle operator to refer to the owner's manual or standard to determine the actual tire maximum load. The agency does not dispute that a load index rating is informative. Manufacturers are welcome to add, in addition to the maximum load rating, the load index to the tire sidewall. A similar argument is applied to the speed rating.

5. SECONDTIN

The agency's proposal to require the TIN to be placed on both sidewalls of the tire elicited a range of different viewpoints. Private citizens, CIMS, and Ford stated that placing the TIN on the outside wall of the tire was a desirable requirement as the only realistic method to determine if a tire is recalled without having to take the vehicle to a dealer for evaluation. However, all tire industry respondents objected to requiring the full TIN on both sides of the tire because of the manufacturing costs and safety issues discussed above.

After visiting the Firestone tire manufacturing plant, the agency concurs with the tire industry commenters that requiring a second full TIN be molded on tires presents both significant safety and financial concerns. The agency has decided to adopt a combination of two suggestions put forth by the tire industry. NHTSA has decided to require that the full TIN be labeled on the intended outboard sidewall of the tire and that either a full TIN or a partial TIN—one without the date code but still retains the manufacturer's identification, tire size, and optional information—is to be labeled on the opposite sidewall. According to NHTSA's records of recent recalls, 80% of tires potentially subject to a "typical" recall could be eliminated from the recall pool based on the plant code and information other than the date code contained within the TIN. The "intended outboard sidewall" is defined in FMVSS No. 139 as a tire sidewall that contains a whitewall, white lettering, or manufacturer or model name molding which is higher or deeper or more pronounced than on the other side of the tire. If an intended outboard sidewall does not exist, the manufacturer will still be required to mark the full TIN on

one sidewall of the tire and either the full or partial TIN on the other sidewall. In consideration of the fact that a universe of tires that do not have an “intended outboard sidewall,” the agency may, in a future rulemaking, consider requiring tire manufacturers to indicate, through permanent or temporary labeling, that the side of the tire containing the full TIN be mounted facing outward.

B. TINADJUSTMENTS

1. REORDERING OF TIN

All commenters who addressed the issue, except for CU, opposed a reordering of the TIN. This opposition was based mostly on concerns about the confusion for consumers and tire dealership personnel that would result from having tires in circulation, for up to 12 years, with two different TIN code sequences, costs to revise printed materials and databases, and campaigns to re-educate consumers and technicians.

The agency had based its proposal on the comments to the ANPRM and the results of the focus groups that showed consistent support for making the TIN more user-friendly and readable. To that end, the agency believed that proposed alternations to the current TIN sequence would have made the TIN easier for consumers to understand for recall related purposes.

However, the arguments of the tire industry had merit. The agency agrees that the suggested revisions to the TIN have no proven benefit to consumers and may prove counterproductive in its efforts to improve consumer information. Therefore, NHTSA

has decided not to reorder the TIN. Instead, it will work to make the TIN more understandable through consumer education efforts.

2. HEIGHT OF TIN

The agency has decided to require a minimum 6 mm (1/4") height font size to enhance the readability of the TIN. Tire manufacturer and consumer commenters, except for Advocates (who believes 6 mm is still insufficient), support the 6 mm TIN height. Advocates continue to express concern for individuals with CSF.

NHTSA disagrees with Advocates' assertions and notes that they did not provide data supporting their assertions or alternatives to the agency's proposal. The agency's proposal for a 6 mm uniform TIN height was based on previous rulemakings and comments to the ANPRM, which indicated that 4 mm was not a sufficient font height for the TIN, particularly for individuals with visual impairments.

Comments on the ANPRM and NPRM and results from the focus groups concerning the readability of the TIN did not specify a particular font size. Commenters, except for Advocates, did not disagree with the agency's suggestion that a uniform 6 mm TIN font height will make the TIN easier to read and would not impose a significant burden on tire manufacturers. Therefore, 6 mm will be the minimum required font size and no restriction will prevent manufacturers from using a larger font size for the TIN characters.

C. VEHICLE PLACARD

The intent of the improvements to the current placard and label is to make them more noticeable and explicit. NHTSA believes that arrangement and shape of the labels is irrelevant to those purposes, and therefore, is amending the regulatory language to allow such changes. NHTSA has also re-examined the placard and label and has decided to adopt the suggestion to specify only limited format requirements with minor modifications to the proposal based on comments. These modifications and the agency's rationale for its decisions regarding the placard and the label are discussed below.

1. CONTENT

The proposed placard and label contained a black-and-white tire symbol icon that was in the upper left hand corner of the placard and label. Vehicle manufacturer commenters did not state a general objection to the icon, although Volkswagen commented that the icon should not be required on a placard if it only shows seating capacity and vehicle capacity weight.

Focus group participants strongly believed that a visual cue, such as a tire symbol icon, would aid drivers in identifying and locating tire information. NHTSA agrees with the participants' judgment that the icon will attract the driver's attention and will aid the driver in recognizing that the placard and label is critical to the safe operation of motor vehicles, NHTSA has decided to retain the tire icon requirement as specified in the proposal. NHTSA believes that consistency in graphics will prevent any confusion about the meaning of the placard and label.

In regards to Volkswagen's suggestion that the icon only appear on the label, if that option is chosen, NHTSA believes the loading information remaining on the placard, which pertains to the load that can be carried at the recommended inflation pressure of the tires, is tire related and should be identified by the icon on the placard. Retaining the icon on the placard will assist consumers in understanding the overall meaning/purpose of the placard, even if the recommended inflation pressure is located on the label rather than on the placard. Therefore, the rule requires that the black-and-white tire icon symbol appear on both the placard and label, as represented in Figures 1 and 2 of Appendix C (p. 67).

Vehicle manufacturer commenters suggested that the label should include the ISO symbol for owner's manual in place of a statement urging the driver to look in the vehicle owner's manual for further information. NHTSA disagrees. The agency has not been provided, nor does it have reason to believe, that this particular ISO symbol would be intuitive to American consumers. Rather than requiring a symbol that a driver may or may not recognize, the agency believes that it is both important and appropriate to have a statement on the label reminding the driver to read the information in the owner's manual and is requiring that it be included.

The agency has decided to adopt the statement "The combined weight of occupants and cargo should never exceed XXX kg or XXX pounds" to replace the phrase "Vehicle Capacity Weight". The "XXX" amount will equal the vehicle capacity weight of the vehicle as defined in FMVSS No. 110. Commenters noted that the new phrase will aid

consumers recognizing what factors comprise the vehicle capacity weight and what significance that weight has for the same operation of a vehicle. As discussed in the NPRM, the information is the same as that currently required to be placed on the vehicle placard by manufacturers, but will be presented in an easier, more intuitive manner.

The final rule requires manufacturers to label the placard and label with the tire size designation for the tire installed as original equipment of the vehicle by the vehicle manufacturer. In response to a suggestion by Subaru, the placard or label will specify that the tire size designation and accompanying recommended inflation pressure be indicated by the heading "Original Tire Size" or "Original Size". This requirement replaces the requirement that the placard and label contain the vehicle's recommended tire size designation. While in most cases these two identifiers would be the same, this minor revision insures that the consumer is provided with the correct tire inflation pressure information for the tire size actually installed on his vehicle as original equipment by the vehicle manufacturer.

As mentioned in the NPRM, the agency considered adding a requirement for the vehicle manufacturer to label all recommended optional tire size designations on the vehicle placard and/or tire pressure label. Additionally, some commenters, in response to the proposal requested that the agency allow additional/optional tire sizes be listed on the placard and label.

The agency continues to believe that allowing the addition of optional tire sizes, as well as other non-required information, to the placard and label is not appropriate, primarily because listing more than one tire size designation and the corresponding recommended inflation pressure or any additional information would require more wording to be added to an already crowded vehicle placard. The agency believes that overcrowding the vehicle placard and/or tire inflation pressure label with information would discourage use of tire inflation pressure information on the placard/label. Additionally, vehicle manufacturers may label this additional information on the certification label. Therefore, this rule will specify a prohibition concerning "other information" from being added to the placard and label.

Manufacturers also asked to be allowed to present the label text not only in English, but also in other languages. NHTSA's current policy is to allow a required message to be stated in additional languages once the required English language message was provided.

As stated above, the placard and label requirements will include a prohibition against "other information." NHTSA will not consider translations of the required placard and label message to be "other information." However, to reiterate, all the requirements for the English label message must be met, including the requirement, as discussed below, that the content must be "legible, visible, and prominent."

The agency also concurs with the commenters' suggestion to allow abbreviations for measurements, such as "lbs." for pounds and "kg" for kilograms and will permit manufacturers to employ abbreviations for measurements at their discretion.

2. FORMAT

In response to manufacturer concerns that it will not be feasible to fit the placard and label on the B-pillar or door edge, NHTSA is not specifying a particular size, dimension or shape for the label. In anticipation of the concern that the labels may not be **an** adequate size, NHTSA believes that concerns over liability will make it unlikely that manufacturers would make the label, or its contents, too small. Further, despite the absence of any current requirement about placard size, no commenter provided/presented **an** example of a vehicle placard that the commenter regarded as too small.

With respect to the size of the text on the placard and label, NHTSA learned from focus groups that the public generally prefers larger fonts in label text because it is easier to read. This helps ensure the placard and label will effectively convey the message to the reader. NHTSA, in its proposal, considered mandating a minimum font size for the text, but has not done so for two reasons. First, it is difficult to specify a single font size that would assure ease of reading with all possible typefaces. Second, NHTSA does not think it necessary to specify a regulatory requirement for font sizes to assure that manufacturers will make the message large enough to be easily read. Additionally, NHTSA has not required any particular font face, size, or case for the vehicle placard. Manufacturers who choose the option to use both the placard and label may wish to use the same font

face, size, and case in both labels. Today's rule allows them the flexibility to do so.

NHTSA has, therefore, decided not to specify either a particular font face or font size or case for the placard and label. As other label sizes (e.g., rollover, airbag) have not been a problem for the agency in the past. The final rule will specify similarly that the text on the placard and label be "legible, visible, and prominent" to the driver. If the agency becomes aware of cases in which the size of the placard's and label's text is too small, we will revise the rule to specify label and font size.

3. LOCATION

NHTSA has re-examined the labels, and the proposed vehicle locations for the labels, and agrees that there would be issues at some locations about the sufficiency of the space for the placement of the labels of the proposed specifications.

This rule also recognizes that the tire inflation pressure label will be placed proximate to the vehicle placard. A standardized location for placard and label will contribute to consumer awareness of recommended tire inflation pressure and load limits by providing a consistent and predictable place for this information. Vehicle manufacturers provided a number of alternative locations for the placard and label citing difficulties in fitting the placard or label on the B-pillar or door edge. The agency, however, notes that it has provided manufacturers with great flexibility concerning the size, shape, and dimension of the placard and label. This flexibility provides manufacturers great latitude to design the placard and label in a manner that can be configured to virtually every vehicle design. Furthermore, there would be no prohibition on placing additional tire inflation pressure

labels on the vehicle in locations other than the B-pillar, except as precluded by other safety standards.

In response to comments, NHTSA is relaxing the location requirements for the placard and label and has added a second alternative to the requirement that the vehicle placard and tire inflation pressure label be located on the driver's side B-pillar. As proposed in the NPRM, the rule requires that if a vehicle does not have a B-pillar, then the placard and label would be placed on the edge of the driver's door. Also with this rule, if a vehicle does not have a B-pillar or driver's side door edge, the placard and label are to be placed on the inward facing surface next to the driver's seating position. The agency believes that this will allow manufacturers two alternatives if it is not possible to place the placard and label on the B-pillar. Allowing manufacturers to place the placard and label on the inward facing surface next to the driver for vehicles that do not have a B-pillar or driver side door or door edge and is similar to one of the alternative placement specifications for Certification Labels in §567.8.

4. COLOR

Several vehicle manufacturers opposed the use of color on the placard and label citing costs, lack of benefits, and that the placard and label are not caution or warning labels and therefore do not follow ANSI protocol. The agency, however, has decided to specify limited color requirements on both the placard and the label to highlight certain information. Yellow on a black background is required for the headings of the placard

and label and for the phrase "See owner's manual for additional information." On the vehicle placard, the tire inflation pressure information must be differentiated by a red border. However, a border around the entire placard and label (as shown in black on Figures 1 and 2 in the appendix) is not required.

In response to start-up and production costs for colored placards and labels asserted by certain vehicle manufacturers, the agency estimates that the costs imposed to them will only be \$0.04 for the label and its application. The agency believes that this is an inexpensive method of conveying the extremely important message of vehicle loading and tire inflation pressure.

With regard to the assertion that the agency's use of colors on the placard and label does not follow ANSI protocol, the agency believes the use of colors on the placard and label will draw attention to the safety information contained on the labels. This belief is supported by survey results and focus group recommendations to add color to the placard.

Survey data indicate that most individuals are unaware of the existence and/or location of the tire inflation pressure and load limit information placards. Surveys also confirm that maximum tire pressure is often confused with recommended inflation pressure.

Although, these surveys have not addressed load limit issues, the results from NHTSA's focus group and comments received in response to the ANPRM do indicate that consumers are unaware that these limits exist, where they are located, and how to use them.

Thus, given the potential safety benefit and increase in consumer awareness, NHTSA is requiring the use of color on the vehicle placard and tire pressure inflation label.

5. MULTISTAGE MANUFACTURER

NTEA and the Alliance commented that the proposed requirements for all light vehicles to be labeled with the vehicle capacity weight (expressed as “The combined weight of occupants and cargo should never exceed XXX”) would create problems for manufacturers —primary, secondary, and final—of multistage vehicles. More specifically, these commenters expressed concern that the vehicle capacity weight labeled on the placard by the primary manufacturer would be rendered invalid by subsequent modifications and, additionally, that there would be excessive costs associated with the secondary manufacturers being required to physically weigh the finished vehicle to determine the vehicle capacity weight. Additionally, NTEA suggested that alterers be permitted to replace or cover over original placards with those containing updated and accurate information for the altered vehicles.

NHTSA agrees with commenters that the aforementioned issues need to be addressed.

The agency has decided to require that:

1. Incomplete and intermediary manufacturers not affix a placard to an incomplete vehicle;
2. Alterers must affix a new placard, containing accurate information for the altered vehicle, over the placard installed by the vehicle manufacturer; and
3. Final stage manufacturers label vehicles with vehicle capacity weight and seating designations “as finally manufactured” utilizing information contained in the document (“IVD”) required by §568.4 to be provided by incomplete and

intermediary vehicle manufacturers and the information particular to their role in the manufacture of the vehicle.

D. OWNER'S MANUAL

All commenters concurred that the owner's manual serves as a single, reliable source containing the proposed required information for tires and tire safety information listed above would aid consumers in properly maintaining their tires and adhering to load limits.

Some vehicle manufacturers suggested that the agency better specify or define aspects of the information to be included in the owner's manual. The agency, however, believes that uniformity is not needed in regards to the discussion of tire safety issues, other than "Steps for Determining Correct Load Limit." The agency believes that manufacturers are in a better position to provide drivers with adequate explanations of tire labeling, recommended tire inflation pressure, a glossary of tire terminology, and tire care (Section III.E, (1) thru (5) of this document).

VI. COSTS DUE TO FINAL RULE

NHTSA believes that this proposal would result in minimal costs for tire and vehicle manufactures. Costs to manufacturers are broken down into three (3) categories for analysis: tire and TIN changes, placard label update, and owner's manual changes.

A. TIRE & TIN CHANGES

In response to the proposals set forth in the NPRM, RMA estimated that compliance costs to change 101,148 molds to be \$197,365,132 (one-time cost to reorder and add second TIN) and an annual recurring cost of \$224,106,705. The average cost to upgrade a single mold is \$1,951 ($\$197,365,152 \div 101,148$ molds), which does not include the annual recurring cost. RMA's cost estimates submitted to the NPRM are reproduced in Table 1a.

Table 1a. RMA Tire Labeling Cost Summary

Costs to Add Second TIN	
Revise Drawings for Second TIN	\$12,628,600
Rework 101,148 Existing Molds for Second TIN (Includes shipping and handling)	\$63,368,341
Cost for Additional Equipment	\$10,751,000
Mold Rework Lost Production	\$26,720,000
Total	\$113,467,941
Cost to Reorder TIN	
Revise Drawings for Reordered TIN	\$6,926,428
Rework Existing Molds for Reordered TIN (Includes shipping and handling)	\$52,153,163
Computer Systems Reprogramming	\$4,006,600
Mold Rework Lost Production	\$20,811,000
Total	\$83,897,191
Total One-time Cost to Add Second TIN and Reorder TIN	\$197,365,132
Annual Recurring Costs for Second TIN	
Labor to Change TIN Weekly (52 weeks/year)	\$34,718,055
Lost Production During Down-time to Change TIN	\$189,388,650
Total	\$224,106,705

In the final rule, however, NHTSA only required a full TIN to be placed on the intended outboard side and either a partial or full TIN on the intended inboard side of the tire. The agency also did not require a reordering of the TIN sequence. The \$63,368,341 to rework 101,148 existing molds for a second TIN and the \$26,720,000 from lost production due to the molds being reworked to accommodate the updates will be removed from the final estimates. Therefore, RMA estimates were significantly reduced to just \$23,379,600 (cost to add second TIN only). These finalized cost estimates are presented in Table 1b. In addition, NHTSA believes that the above value of \$23,379,600 represents an upper limit rather than an average. The agency feels that the original costs in Table 1a

represent the fact that manufacturers would have to revise drawings for molds currently being used, and to be retrofitted with the modifications. However, given the compliance phase-in period, we believe that manufacturers will have ample time to incorporate the modifications into new tire models (and therefore molds) as part of their usual product updates.

Table 1b. Updated RMA Estimates

<i>RMA Estimated Costs to Add Second TIN</i>			
	Revise drawings for second TIN		\$12,628,600
	Cost for additional equipment		\$10,751,000
	One-Time Total Cost	=	up to \$23,379,600
	Estimated Maximum Cost per Mold (for 101,148 molds)	=	\$231.14
	Estimated Maximum Cost per Tire (for 283 million tires)	=	\$0.08

According to RMA, the greatest proportion of annual recurring costs was due to the weekly changing of the TIN and resulting downtime. The extended lead-time and phase-in period would allow the tire manufacturers to gradually and seamlessly replace the worn molds as part of their production run, rather than all at once. This would dramatically reduce, if not make obsolete, the costs needed to update the molds to accommodate a partial second TIN.

ETRTO estimated that up to 250,000 tire molds would need to be reworked at an expenditure of more than \$150,000,000 or \$600 per mold ($\$150,000,000 \div 250,000$ molds) and an additional \$220,000,000 would be needed to change the TIN weekly. ETRTO was not very detailed in their explanations of their costs, so it was assumed that

the \$150,000,000 incurred by adding a second TIN would be proportionally reduced by the final rule, in a similar fashion as RMA members. However, due to the lack of specific information, NHTSA will not attempt to estimate the actual reduction in cost. ITRA/TANA's estimate of a minimum of \$250 per mold was, again, not explicit in how the costs were distributed. However, because ITFWTANA represents smaller, retread manufacturers, the agency believes that the cost reduction may not be significant as RMA's or ETRTO's.

Estimates for retread manufacturers were based on projected sales figures provided from ITRA and incorporated cost estimates from RMA. ITRA projected that 470,000 passenger car and 5.0 million light truck retread tires would be sold in 2002. RMA cost estimates were used since ITRA did not provide any to the agency. NHTSA assumed that the costs to retread tire manufacturers were the same as new tire manufacturers. Therefore, the agency used a linear proportion of RMA's final, one-time cost of \$23,379,600. Since retread manufacturers produce about 5.47 million retread tires that will fall under this rule, only a percentage of RMA's \$23,379,600 would be applicable to retreaders. This percent factor is calculated to be 1.93% ($= [5.47 \text{ million} \div 283 \text{ million}] \times 100\%$, number of retread tires produced divided by the number produced by RMA members). Thus, the total cost to retread manufacturers is \$451,895 ($= 1.93\% \times \$23,379,600$) or about \$0.08 per tire ($= \$451,895 \div 5,470,000 \text{ tires}$). Like RMA, this cost is a one-time investment, which does not recur annually.

Table 1c. Estimates for Retreaders

<i>NHTSA Estimated Costs to Add Second TIN for Retread Manufacturers</i>				
<i>Passenger Tires</i>	–	<i>Light Truck Tires</i>	=	<i>Projected Total Retread Tires Produced in 2002</i>
470,000		5,000,000		5,470,000
(<i>Retread Tires</i>	÷	<i>RMA Production</i>	) × <i>RMA Costs</i>	= <i>Costs to Retread Manufacturers</i>
5,470,000		283,000,000	\$23,379,600	\$451,895
<i>Costs to Retread Manufacturers</i>	–	<i>Number of Retread Manufacturers</i>	=	<i>Cost per Retread Manufacturer</i>
\$451,895		750		\$603

Given that there are about 750 retread manufacturers that produce retreads for passenger cars and light trucks, the cost per manufacturer is about \$603 ($= \$451,895 \div 750$ manufacturers). The \$603 per manufacturer may be a substantial underestimation, since most retread manufacturers are small companies, with fewer sales over which to allocate costs than the larger tire manufacturers. However, even if costs to manufacturers were ten times higher for retread manufacturers (\$6,030), the agency believes that this will present a minimal impact to retread manufacturers. Calculations are summarized above in Table 1c.

		Organization		
		RMA	ETRTO	ITRA/TANA
Cost Per Mold	Commenters' Estimates Based on NPRM	\$1,195	\$600	\$250
	Estimates based on Final Rule	up to \$231	NIA	N/A

Although RMA's estimates were much higher than ETRTO's and ITRA/TANA's, NHTSA is basing its costs to modify tires on RMA's estimates given that their costs estimates were more detailed in the NPRM docket comments. In addition, since RMA represents a larger proportion of tire manufacturers, we believe their estimates may be more accurate and realistic than the latter two organizations. The one-time cost of compliance with the final rule is thus estimated to be \$23.4 million, and is equivalent of \$0.08 per tire ($=\$23,379,600 \div 283,000,000$ tires⁵) or \$231 per mold ($=\$23,379,600 \div 101,148$) (see Table 1b).

B. PLACARD & LABEL MODIFICATIONS

NHTSA estimates that the average cost to implement a color vehicle placard or color tire inflation pressure label is about \$0.04 per label per vehicle (this cost combines the label

⁵ RMA's estimates include those tires produced domestically by RMA members and those produced by RMA members abroad for U.S. consumption. However, representatives from RMA were not certain as to the number of tires imported. Thus the 283 million tires only encompass the entire population of tires produced in the U.S. and abroad for U.S. consumption by RMA members. It does not include U.S. or foreign production of non-RMA members for U.S. consumption. Therefore, NHTSA has opted to use 287 million tires (from the Tire Pressure Monitoring System Economic Assessment) as an estimate of total annual tire production, whereas 283 million tires will be the estimate used in conjunction with RMA cost estimates (Table 1a and 1b) to determine the cost per tire.

and labor costs). The costs are separated by vehicle type (passenger cars, multipurpose passenger vehicles/light trucks, and trailers), with updated labels costing \$0.01 and labor to apply the label costing \$0.04.

GM states that the use of color labels would drive up the cost to \$0.24 per label in addition to an initial investment of \$300,000 for the color printers. NHTSA believes this estimate to be inflated given the quantity of labels that will be produced. On the other hand, NTEA's estimate of at least \$0.25 (in addition to scales and other equipment needed to determine the correct vehicle weight) is more realistic, given that they represent smaller manufacturers with a proportionately reduced output.

The agency estimates that approximately eight million new passenger cars produced each year will need to meet this standard, which results in a total cost of \$400,000 ($= (\$0.01 + \$0.04) \times 8,000,000$). We assumed that 70% of the vehicles would only need one label with the newly required information and color incorporated onto a single label (i.e., have loading and tire inflation pressure on just the placard), whereas the remaining 30% of the vehicles would need to add an additional label (i.e., have both a vehicle placard and tire inflation pressure label). **NHTSA** believes that the cost of modified labels will roughly equal the cost of a new, stand-alone label. For the 70% of passenger cars that would incorporate the information into a single label, the cost is only \$0.01 for the updated label (the labor is, in a sense, already there and thus not included in the cost). This resulting cost is \$56,000 ($= 0.70 \times \$0.01 \times 8,000,000$). The remaining 30% will need to add a second label in addition to having the label applied to the vehicle, with a cost of \$120,000

($= 0.30 \times (\$0.01 + \$0.04) \times 8,000,000$). The final adjusted cost is \$176,000 ($= \$56,000 + \$120,000$), which is less than half of the original estimate of \$400,000.

For multipurpose passenger vehicles (MPV) and light trucks, a similar approach is employed. It is projected that 8,000,000 MPV's and light trucks will need to have a label and updated label affixed to it. However, of the eight million MPV's and light trucks, 475,000 are multistage vehicles that might undergo modifications resulting in changes in its GVWR. Therefore, the labels applied by the original equipment manufacturer (OEM) will no longer be valid. The cost of the remaining 7,525,000 OEM (or single-stage) vehicles is \$376,250 ($= (\$0.01 + \$0.04) \times 7,525,000$). **NHTSA** did not estimate the cost incurred by multistage manufacturers to produce and apply labels. Instead, we will utilize NTEA's estimates of \$0.25 per vehicle, with an estimated total expenditure of \$118,750 ($= \$0.25 \times 475,000$) for multistage manufacturers. It was assumed that MPV's and light trucks would only require a single vehicle placard with all the required information.

Lastly, the cost due to the trailers is straightforward, and is \$50,000 ($= (\$0.01 + \$0.04) \times 1,000,000$). A summary of the costs can be found in Table 2a. In addition, the agency has decided upon using one value for the costs to manufacturer (both single- and multistage), which will be detailed in the following paragraph.

The weighting factors are simply the percentage of the market share a particular model comprises of the entire market. For passenger vehicles it is 47.06% ($=$

$(8,000,000/17,000,000) \times 100\%$), MPV's and light trucks not including multistage vehicles is 44.26% $(= (7,525,000/17,000,000) \times 100\%)$, multistage vehicles is 2.79% $(= (475,000/17,000,000) \times 100\%)$, and trailers is 5.89% $(= (1,000,000/17,000,000) \times 100\%)$.

Next, the weights are multiplied by the cost of the label and labor for each particular vehicle class. This product is the weighted average cost (rather than absolute cost) imposed across all vehicle types (passenger, MPV and light truck, trailer, multistage), and is calculated because of the simple fact that each vehicle type has a different cost per label. However, before we determine the proportional cost, we will establish the cost per label. For passenger cars, the cost of the label and labor is \$0.02 $(= \$176,000 \div 8,000,000)$; for MPV's and light trucks, it is \$0.05 $(= \$376,250 \div 7,525,000)$; trailers is also \$0.05 $(= \$50,000 \div 1,000,000)$; and multistage vehicles is \$0.25, as stated by NTEA.

Lastly, the weighting factor is multiplied by the cost per label for a particular vehicle type. This value is the percent contribution of the label cost of a particular vehicle type to the entire fleet. A summary of these costs can be found below in Table 2b.

Table 2a. NHTSA and manufacturers' estimates for placard label addition.

<i>Passenger Cars</i>				
cost of (New Label \$0.01	+	cost of Application of New Label \$0.04	) × Number of Passenger Cars 8,000,000	= Cost \$400,000
		Cost of label and application for 30% of Passenger Cars \$120,000	Cost of label only for 70% of Passenger Cars \$56,000	= Adjusted cost \$176,000
<i>Multipurpose Passenger Vehicles & Light Trucks</i>				
cost of ' New Label \$0.01	+	cost of Application of New Label \$0.04	) × Number of MPV's and LT's 7,525,000	= Cost \$376,250
<i>Multistage Vehicles</i>				
		Cost and Application of Label \$0.25	) × Multistage Vehicles 475,000	= cost \$118,750
<i>Trailers</i>				
cost of New Label \$0.01	+	cost of Application of New Label \$0.04	) × Number of Trailers 1,000,000	= Cost \$50,000
		Total Adjusted Costs = \$721,000		
		Unweighted Average Cost = \$0.04 per Label*		

*Assuming one label per vehicle

Table 2b. Calculation of the Weighted Average Cost

	Weighting Factor	Cost Per Label	=	Weighted Cost
Passenger Cars	47.06%	\$0.02		\$0.010
MPV's and Light Trucks	44.26%	\$0.05		\$0.022
Multistage Vehicles	2.79%	\$0.25		\$0.003
Trailers	5.89%	\$0.05		\$0.007
		Total Weighted Cost	=	\$0.04

In summary, the total cost to manufacturers (including multistage manufacturers) is \$721,000. The weighted average cost is roughly \$0.04 per vehicle per label—spread across the entire fleet of eight 17 million vehicles—for the label and its application (which is, for all practical purposes, the same as the unweighted average cost per label of $\$0.04 = \$721,000 \div 17,000,000$).

C. OWNER'S MANUAL UPDATE

In the NPRM, NHTSA estimates that costs to modify the owner's manual would total \$1,882,000. These costs include \$12,000 for writing and editing and \$1,870,000 to design and print them. These costs are summarized in Table 3. No commenters offered any additions or corrections as to the costs to modify the owner's manual. Therefore, NHTSA will assume that the costs in Table 3 are reasonable and accurate for the modifications.

Table 3. NHTSA estimates of owner's manual updates.

<i>Write and edit approximately 2,000 words</i>				
Additional Hours	× Cost per Hour	× Number of Manuals	=	Cost
8	\$30	50		\$12,000
<i>Print and layout costs</i>				
Additional Pages	× Cost per Page	= Cost per Manual		
8	\$0.0125	\$0.10		
Number of New Passenger Cars and MPV Manuals	+	Number of New Trailer Manuals	=	Total New Manuals
16,000,000		1,000,000		17,000,000
Total New Manuals	× 1.10 (10% Overprint for Replacements)	× Cost per Manual	=	Cost
17,000,000	1.10	\$0.10		\$1,870,000
				Total Costs = \$1,882,000

D. SUMMARY OF COSTS DUE TO FINAL RULE

In summary, the cost to modify the tires is up to \$23,379,600 or up to \$0.08 per tire.

However, the \$23.4 million cost is an initial, one-time investment spread over the phase-in period, with no residual annual recurring costs at the end of the phase-in. Also, the costs incurred by non-RMA members and the number of tires produced by RMA members abroad were not included in the final estimates. If we look at the time in which the rule takes in to effect (September 1, 2004) to when the manufacturers must meet 100% of the compliance requirements (September 1, 2006), it gives us a time frame of 2

years. This results in a cost per year of up to \$1 1,689,800 ($= \$23,379,600 \div 2$ years) or \$0.04 per tire per year ($= \$1 1,689,800 \div 283,000,000$ tires; assuming a constant production of 283 millions tires per year). The total cost per year to both **RMA** and non-RMA manufacturers is \$1 1,855,027 ($= [\$11,689,800 \div 283,000,000 \text{ tires}] \times 287,000,000$ tires), where the value in square brackets represent the cost per tire and 287,000,000 tires represent the total number produced by **RMA** and non-RMA members world-wide. Costs to retread manufacturers are liberally estimated at \$603 per manufacturer. However, the agency believes this value should be higher given the smaller nature of retread manufacturers.

On the other hand, costs of placard and label modifications will be incurred on **an** annual basis by manufacturers, with a total annual expenditure of \$721,000 or about \$0.04 per vehicle. A more detailed breakdown of the costs can be found in Table 2a.

Lastly, costs to update the owner's manual will result in a cost of \$1,882,000 to manufacturers. Of the total costs, \$12,000 is a one-time, fixed cost to write and edit approximately 2,000 words. The remaining \$1,870,000 is due to printing and layout costs that are incurred on an annual basis. This results in an initial cost per vehicle of about \$0.11. Even with the \$12,000 removed, the cost of label and application per vehicle is still \$0.11 ($= \$1,870,000 \div 17,000,000$ vehicles), since the writing and editing are so miniscule.

We will now look at the average cost imposed on industry as a whole (in other words, spreading the costs **equally** among all affected manufacturers) and on an annual basis to gain a better insight as to the costs per year due to this rule. Assuming that manufacturers begin the compliance requirements on the day the rule is effective (September 1, 2004), then on a per year per vehicle basis, tire and TIN changes will be up to \$0.16 (\$0.04 per tire \times 4 tires; the \$0.04 per tire encompasses new and retread tires), placard and labels will be \$0.04, and owner's manual changes will be \$0.11. For the first year, this results in a per vehicle cost of up to \$0.31 ($= \$0.16 + \$0.04 + \0.11) or a total cost of up to \$5,270,000 ($= \$0.31 \times 17,000,000$). Now, let us look at the distributed costs when the compliance phase-in period for the tires has been reached (September 1, 2006). The costs due to the tire changes will be zero, since 100% of the tires now meet the requirements and no new changes to the tires are expected. The remaining costs are the \$0.04 due to the placard and label and \$0.11 from the owner's manual (note: the \$12,000 fixed-cost found in the placard and label modifications was removed, however, the cost per label was still \$0.11). Therefore, the cost per year per vehicle due to this rule in the long run is \$0.15 ($= \$0.04 + \0.11) or \$2,550,000 ($= \$0.15 \times 17,000,000$ vehicles) to the industry.

Table 4. Summary of costs for final changes.

Tire and Tin Changes			
(New tires only)			
		Total	= \$23,379,601
		Average Per Mold cost	= \$231.14
		101,148 Molds	
		Average Per Tire Cost	= \$0.08
		287,000,000 Tires*	
*Based on Tire Monitoring Study			
(New and retread tires)			
		Total	= \$23,381,495
		Average Per Tire Cost	= \$0.08
		292,470,000 Tires	
Placard and Label Modifications			
		Total	= \$721,000
OEM	16,525,000 vehicles	Average Per Vehicle Cost	= \$0.04
Multistage	475,000 vehicles	Average Per Vehicle cost	= \$0.25
Combined	17,000,000 vehicles	Weighted Average Cost	= \$0.04

Owner's Manual Updates**Total = \$1,882,000**

**Average Per Vehicle
Cost = \$0.11
(17,000,000
Vehicles)**

One-Time Costs and Recurring Costs

	<i>Tire and TIN Changes</i>	<i>Placard and Label</i>	<i>Owner's Manual</i>		Totals
			<i>Write and Edit</i>	<i>Print and Layout</i>	
<i>One-time</i>	\$23,379,600		\$12,000		\$23,391,600
<i>Annually Recurring</i>		\$721,000		\$1,870,000	\$2,591,000
					\$25,982,600

VII. BENEFITS

NHTSA believes that this final rule would be effective in increasing public awareness of tire safety, particularly the understanding and maintenance of proper tire inflation and load limits. This final rule will also enable consumers to more easily identify TIN and other tire information for recalls and other notifications. In addition, the final rule will standardize the location and content of vital information relating to proper tire maintenance. By increasing consumer knowledge and awareness, these measures should result in reduced tire failures and tire related crashes, and ultimately fewer deaths and injuries. However, before presenting the benefits, a discussion of the current safety problems will be laid out, followed by a discussion of how the final rule may improve the current situation.

A. DIFFICULTY LOCATING THE TIN

As a result of the difficulty and inconvenience of checking the TIN's, the percentage of people who respond to a tire recall campaign is reduced and motorists unknowingly continue to drive their vehicles with potentially unsafe tires.

The side of a tire bearing the TIN is often mounted so that it faces inward. In the case of whitewall tires, this occurs because the TIN is almost always molded on the blackwall (i.e., inside sidewall) of the tire. Whitewall tires account for a small and declining percentage (currently 5% or less) of original equipment tire sales in this country, but about 40% of replacement tires. There are about three times as many replacement tires as original equipment tires sold each year. Blackwall tires (those with no whitewalls),

which have the TIN on one sidewall, are more likely to be mounted with the number side facing in than out because of aesthetic motivations. Based on this information, we estimate that approximately 65% of all tires are mounted with their TIN's not readily visible.

When the TIN's appear on the inside sidewalls of the tires mounted on vehicles, motorists have three inconvenient ways of finding and recording the TINS. They can either:

1. Slide under the vehicle with a flashlight, pencil and paper, and search the inside sidewalls for the TIN's;
2. Remove each tire, find and record the TIN, and then replace the tire; or
3. Enlist the aid of a garage or service station that can perform option 1 or 2 or place the vehicle on a vehicle lift so that the TIN's can be located and recorded.

B. LACK OF CONSUMER KNOWLEDGE ON PROPER TIRE PRESSURE

Maintaining proper inflation pressure in tires is important to the safe and efficient use of motor vehicles.

The recommended inflation pressure is labeled on the vehicle placard or the vehicle certification label by the vehicle manufacturer to provide the proper pressure at the maximum loaded vehicle weight, based upon vehicle specification and operation as determined by the vehicle manufacturer. The recommended inflation pressure is often confused with the maximum inflation pressure that is labeled on the tire by the tire manufacturer to provide the maximum cold inflation pressure to which a tire may be inflated based upon the maximum load rating for that tire.

Maintaining tires at their proper inflation pressure, instead of allowing them to become under-inflated, reduces heat build up, minimizes tire wear, contributes to good vehicle handling and improves fuel economy by decreasing the rolling resistance of the tires. In light of the trend toward self-service gas stations, the motorist's responsibility for maintaining proper inflation pressure is more significant. A **NHTSA** survey of 11,530 passenger cars, pickups, vans, and sport utility vehicles found that 20% of those vehicles had one or more tires that were significantly under-inflated (defined as having a pressure of 30% or more below the recommend level on the vehicle placard). Unfortunately, surveys indicate that a significant number of vehicles are being operated with under-inflated, overloaded and/or damaged tires and that the public needs to be reminded to inspect and properly maintain their tires.

The 2000 Bureau of Transportation Statistics (BTS) Omnibus Survey, conducted in September 2000, contained four questions on the public's knowledge of tire pressure issues. This survey, which contained 1,017 household interviews, indicated that among other things, at least 54.7% of the respondents do not know how to determine the proper pressure for their tires.

The AAA Tire Safety Survey, based on an omnibus nationwide telephone survey of 1,070 adult Americans (539 males and 531 females) who drive a car, motorcycle, or other motor vehicle at least once a week, queried participants on how to identify the correct tire pressure. The survey indicated that, despite a consciousness about checking tire pressure (82% surveyed stated that they checked their tire pressure at least once every three

months and 48% stated that they checked their tire pressure at least once a month), American drivers lack sufficient knowledge about how to determine optimum tire pressure. About half (48%) consult the tire sidewall, and fewer check more reliable methods such as the owner's manual (27%) or the vehicle placard (18%).

The Rubber Manufacturers Association (RMA) survey, based on four hundred 11-minute telephone interviews conducted between October 12 and 19, 2000, with consumers who own or lease a vehicle they drive at least once a week and are responsible for making decisions about the routine maintenance of their vehicle, explored the extent to which consumers are aware of and knowledgeable about tire safety. To assess tire maintenance knowledge, drivers were asked 16 questions related to properly maintaining automotive tires. Of these questions pertaining to tire labeling, drivers were asked to name the best sources for the recommended tire pressure. In response 45% of drivers responded correctly to this question by saying the owner's manual or decals on the inside of the vehicle's door or glove box. On the other hand, 27% responded incorrectly by reporting that the best source for the recommended tire pressure was on the sidewall of the tire, 7% volunteered "tire manufacturer information" in general, and 12% said something else. Only 10% said they "did not know." In addition, a new **RMA** study released in April 2002 revealed that 89% of drivers were not checking their tire pressure properly and 66% of drivers didn't know where to find the proper tire inflation pressure for their vehicle's tires. The results of this study further illustrate the lack of proper maintenance and basic vehicle knowledge and show the need to better inform consumers.

In Spring 2001, the National Center for Statistics and Analysis (NCSA) conducted the 2001 National Automotive Sampling System (NASS) Tire Pressure Special Study (NASS Study) in response to the TREAD Act. *The Preliminary Analysis of Findings, 2001 NASS Tire Pressure Special Study*, dated May 4, 2001, has been placed in the NHTSA Docket No. NHTSA-2000-8572. The NASS Study was designed to assess, among other factors, the extent to which passenger vehicle operators are aware of the recommended air pressure for their tires.

During a total of 336 visits to gas stations, a NASS team collected survey data from drivers from each of the following vehicles categories: passenger cars; sport utility vehicles (SUVs); vans; and pickup trucks. A total of 11,350 vehicle drivers were surveyed about their knowledge of the vehicle manufacturers recommended tire pressure. Survey data were analyzed for the following three categories of vehicles:

1. Passenger cars with P-metric type tires;
2. Trucks, sport utility vehicles, and vans with P-metric type tires;
3. Trucks, SUV's, and vans with either LT-type or high flotation tires.

The drivers, asked how they determine at what pressure to set their tires, answered as follows:

Table 5.

How drivers determine at what pressure to set their tires	Percent (%)		
	Passenger cars with P-metric tires	Trucks, SUVs, and Vans	
		P-metric tires	LT or high flotation tires
Owner's Manual	17.84	14.80	21.90

Vehicle Placard	8.39	7.06	10.84
Tire Labeling	21.56	31.47	44.35
Visually	10.68	8.23	6.83
Other	9.75	9.56	9.89
Does Not Know	6.87	4.31	2.02
Other Person Maintains	23.80	23.07	4.11
Unknown	1.10	1.51	0.06

This data indicates that only 26.23% (**17.84% + 8.39%**) of drivers of passenger cars, 21.86% (14.80% + 7.06%) of drivers of pick-up trucks, *SUVs*, and vans with P-metric tires, and 32.74% (21.90% + 10.84%) of drivers of pick-up trucks, *SUVs*, and vans with either LT or flotation tires know how to consult either the vehicle placard or the owner's manual to determine the correct inflation pressure for their vehicle's tires.

C. SAFETY PROBLEMS ASSOCIATED WITH TIRES

Tire under-inflation, high ambient temperatures, and vehicle overloading are among the factors being considered in the ongoing evaluation of the radial tire failures that have occurred in recent years, which have been associated with rollover and other crashes. For example, when a tire is used while significantly under-inflated, its sidewalls flex more and the air temperature inside it increases, making the tire more prone to failure. In addition, a significantly under-inflated tire loses lateral traction, making handling more difficult. The agency also has received data from Goodyear indicating that significantly under-inflated tires increase a vehicle's stopping distance.

NHTSA's crash files do not contain any direct evidence that points to low tire pressure as the cause of any particular crash. However, this lack of data does not imply that low tire

pressure does not cause or contribute to any crashes. It is simply difficult to implicate the tire because of the numerous variables involved in a crash and multiple damages suffered by the vehicle, and to pinpoint the exact cause is, in some instances, impossible. It simply reflects the fact that measurements of tire pressure are not among the vehicle information included in the crash reports received by the agency and placed in its crash databases. For example, a tire may suddenly blowout, causing the driver to lose control and impact, say, a curb. Although the tire was the cause, the crash investigator may conclude that the driver was to blame and the deflated tire was caused by hitting the curb rather than being the cause of the crash.

The only tire-related data element in the agency's databases is "flat tire or blowout." Even in crashes for which a flat tire or blowout is reported, crash investigators cannot tell whether low tire pressure contributed to the tire failure.

Under-inflated tires can contribute to other types of crashes than those resulting from blowouts or tire failure, including crashes which result from: **an** increase in stopping distance; skidding and/or a loss of control of the vehicle in a curve or in a lane change maneuver; or hydroplaning on a wet surface.

Additionally, under-inflation contributes to tire overload. Tire overload is described as a condition in which the vehicle is carrying more weight than the tire is rated to carry at a specified inflation pressure. For instance, for every 1-psi reduction in inflation pressure,

a vehicle's tires suffer a 1.6% reduction in vehicle capacity weight (passenger plus cargo capacity).

Several crash files contain information on "general" tire related problems that precipitate crashes. The more recent of these files are The NASS-Crashworthiness Data System (NASS-CDS) and the Fatality Analysis Reporting System (FARS).

NASS-CDS data for 1995 through 1998 indicate that there are an estimated 23,464 tow-away crashes caused per year by blowouts or flat tires.

Therefore, about one-half of 1% of all crashes are caused by these tire problems. The rate of blowout-caused crashes for light trucks (0.99%) is more than three times the rate of those crashes for passenger cars (0.31%). Blowouts cause a much higher proportion of rollover crashes (4.81%) than non-rollover (0.28%); and again more than three times the rate in light trucks (6.88%) than in passenger cars (1.87%).

FARS data for 1995 through 1998 showed that 1.10% of all light vehicles in fatal crashes were coded with tire problems. Light trucks had slightly higher rates of tire problems (1.20%) than passenger cars (1.04%). The annual average number of vehicles with tire problems in FARS was 535 (313 passenger cars and 222 light trucks).

Table 6. Estimated Annual Average Number (1995–98 NASS) and Rates of Blowouts or Flat Tires Causing Tow-Away Crashes

	Tire Related Cause	Percent Tire Related
<i>Passenger Cars Total</i>	10,169	0.31%
Rollover	1,837 (18%)	1.87%
Non-Rollover	8,332 (82%)	0.26%
<i>Light Truck Total*</i>	13,294	0.99%
Rollover	9,577 (72%)	6.88%
Non-Rollover	3,717 (28%)	0.31%
<i>Light Vehicles Total</i>	23,463	0.51%
Rollover	11,414 (49%)	4.81%
Non-Rollover	12,049 (51%)	0.28%
*Light trucks, as used here, means pickup trucks, vans (all sizes), and SUV's		

D. POSSIBLE BENEFITS RESULTING FROM FINAL RULE

It is known that under-inflation of tires may cause skidding and/or loss of control or the vehicle, hydroplaning, an increase in stopping distance, or excessive loading on tires. However, concrete, quantitative estimates of the number of potential crashes were not established because of the difficulty in quantifying the change in consumer knowledge and thus being able to estimate the number of crashes that could be prevented with this rule. Therefore, an estimate of the number of crashes possibly prevented could not be calculated. However, from a qualitative stand-point, NHTSA believes that requiring a second TIN (even though partial) and updated placard and/or label will have a significant impact in assisting potential tire recalls and proper tire maintenance. As stated before, according to NHTSA's records of recent recalls, 80% of tires potentially subject to a "typical" recall could be eliminated from the fleet based solely on the plant code and information other than the date code contained within the TIN. In addition, from the

1995-98 NASS-CDS Study (Table 6 in this document), 23,463 tire blow-outs or flat tires leading to a tow-away crash may be reduced by this rule given better consumer awareness of tire safety and maintenance. Also, from the Tire Pressure Monitoring System⁶ final economic analysis, it was estimated in the report that 414 fatalities and 10,275 non-fatal injuries occurred in cases in which a flat tire/blowout was considered the cause of the crash. Potentially, some portion of these 414 fatalities and 10,275 injuries could be prevented as a consequence of this rule.

Requiring a limited, standardized area where the vehicle placard and tire inflation pressure label may be placed will be beneficial, if not vital, in assisting consumers in finding the tire pressure and loading information. Before, the placard could be placed in the glove compartment or an equally accessible place. Accessible places ranged from B-pillars to the trunk. Standardizing the location and the content will prevent confusion among consumers and better disseminate the needed information. NHTSA anticipates that this will lead to better tire maintenance and proper usage.

⁶ “Tire Pressure Monitoring System, FMVSS 139.” Final Economic Assessment, Office of Plans and Policy, NHTSA—U.S. Department of Transportation, 2002.

VIII. LEAD TIME

Section 11 of the TREAD Act requires the agency to issue a final rule on this tire labeling proposal by June 1, 2002. Congress did not set a date by which all covered tires and vehicles would have to meet the improved tire information requirements.

For tires, the agency has decided to extend the lead-in time and institute a phase-in compliance according to the following schedule:

	September 1, 2004 and August 31, 2005	September 1, 2005 and August 31, 2006	September 1, 2006
Percentage of Applicable Tires that Must Meet Standards	40%	70%	100%

This extension of the effective date for tires and the phase-in reflects the reality that the tire manufacturers will need to rework, retool, and replace the tire molds currently being utilized. The agency believes that tire molds for light vehicles tires are replaced every four to five years, thus, on average 20 to 25% of there molds are replaced each year. These estimates take this information into account. NHTSA believes that this phase-in will permit tire manufacturers to continue to use existing molds while they continue acquire new ones that reflect the new tire information requirements. Also, by only requiring that 40% of tires comply with the requirements during the first stage of the phase-in, the agency is providing the industry and its mold shops with a accomplishable task of reworking molds which would not exceed their capacity for such work. By not requiring full compliance until September 1, 2006, NHTSA is providing the tire industry with ample time to accomplish this task.

For vehicle labeling, NHTSA has decided to adopt the effective date of September 1, 2003. The effective date reflected NHTSA's desire for expedited action on this issue. In view of the immediate need to alert the public to tire and loading information and because the labeling revisions to light vehicles constitute format changes (and not

performance or vehicle design changes), **NHTSA** finds that an effective date of September 1, 2003 is reasonable and is in the public interest.

IX. SMALL BUSINESS IMPACT

A. REGULATORY FLEXIBILITY ACT

The Regulatory Flexibility Act of 1980 (5 USC §601 *et seq.*) requires agencies to evaluate the potential effects of their proposed and final rules on small businesses, small organizations, and small governmental jurisdictions. The final rule affects motor vehicle manufacturers and tire manufacturers. The agency does not believe that any of the new tire manufacturers are small businesses. However, there are about 1,000 retread manufacturers in the United States, of which about 750 deal with light vehicle tires that will in some small way be impacted by this rule. Most of these retread manufacturers are small businesses. The cost burden imposed on retread manufacturers is estimated at about \$603 per manufacturer if costs are similar to those for RMA members. Costs may be higher due to economies of scale, but the agency believes these impacts will not be economically significant.

B. UNFUNDED MANDATES REFORM ACT

The Unfunded Mandates Reform Act of 1995 (Public Law 104-4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditures by State, local, or tribal governments, in the aggregate, or by the private sector, of more than \$100 million annually (adjusted annually for inflation with base year of 1995). Adjusting this amount by the implicit gross domestic product price deflator for the year 2000 results in \$109 million $(=(106.99/98.11) \times \$100 \text{ million})$. The assessment may be included in conjunction with other assessments, as it is here.

This proposal is not estimated to result in expenditures by State, local, or tribal governments or tire suppliers of more than \$109 million annually.

X. APPENDIX

A. DOCKET COMMENTERS

Abbreviation	Full Name	Docket Number [NHTSA-2001-11157-XX]
Advocates	Advocates for Highway and Auto Safety	18
Alliance	Alliance of Automobile Manufacturers	33
Charlie West	Charlie West	23
CIMS	CIMS	4, 8
CU	Consumers Union	37
DC	DaimlerChrysler	31
ETRTO	European Tyre and Rim Technical Organisation	14, 28
Focus Group	Equals Three Communications – Tire Labeling Group	7
Ford	Ford Motor Company	9
GM	General Motors	
GRRF	United Nations/Economic Commission for Europe (UN/ECE) Group for Global Technical Regulations for Vehicle Tyres	6, 25, 26
Honda	American Honda Motor Co., Inc	36
ITRA/TAN A	International Tire & Rubber Association Inc./Tire Association of North America	16
JATMA	Japan Automobile Tyre Manufacturers Association, Inc.	29,30
MMC	Mitsubishi Motors Corporation	20
NTEA	National Truck Equipment Association	11
RAC	Rubber Association of Canada	13
RMA	Rubber Manufacturers Association	10
Subaru	Subaru of America, Inc.	32, 34
Volkswagen	Volkswagen of America, Inc.	22

Dockets can be found on-line at <http://dms.dot.gov>

B. FREQUENTLY USED ACRONYMS

ANSI	American National Standards Institute
BTS	Bureau of Transportation Statistics
CDS	Crashworthiness Data System
CFR	Code of Federal Regulations
CSF	Contrast Sensitivity Function
ECE	Economic Commission for Europe
FARS	Fatality Analysis Reporting System
FMVSS	Federal Motor Vehicle Safety Standard
GAWR	Gross Axle Weight Rating
GTS	Global Tire Standard
GVWR	Gross Vehicle Weight Rating
ISO	International Organization for Standardization
IVD	Incomplete Vehicle Document
LSV	Low Speed Vehicle
MPV	Multipurpose Passenger Vehicle
NASS	National Automotive Sampling System
NCSA	National Center for Statistics and Analysis
NHTSA	National Highway Traffic Safety Administration
NPRM	Notice of Proposed Rule Making
OEM	Original Equipment Manufacturer
RMA	Rubber Manufacturers Association
SUV	Sport Utility Vehicle
TIN	Tire Identification Number
TREAD	Transportation Recall Enhancement, Accountability, and Documentation

C. PROPOSED VEHICLE PLACARD AND LABEL

Vehicle Placard

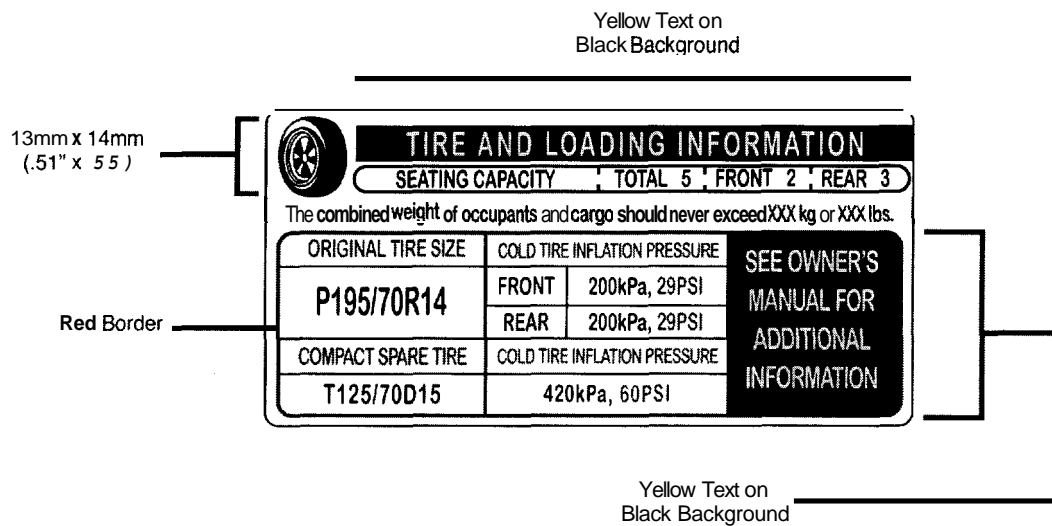
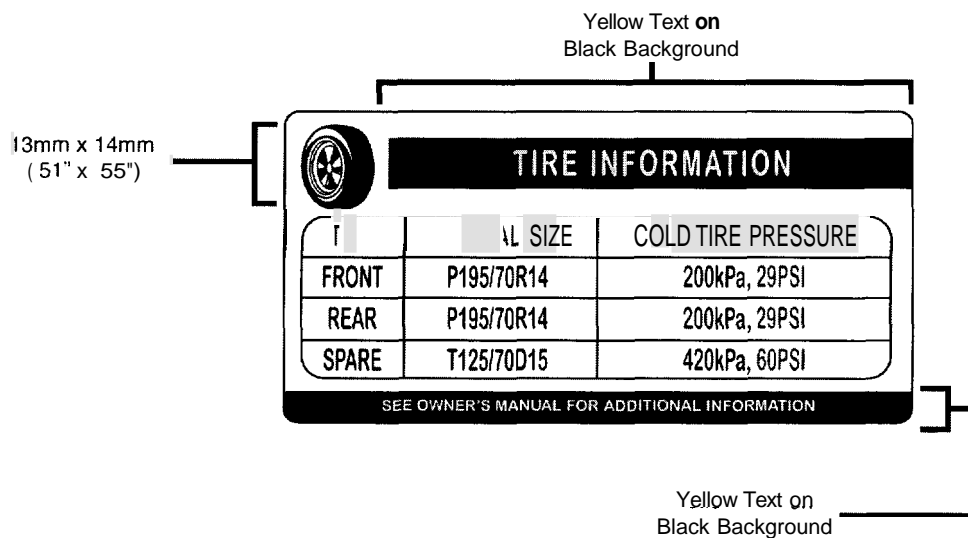


Figure 1.

Tire Inflation Pressure Label



C. PROPOSED VEHICLE PLACARD AND LABEL

Vehicle Placard

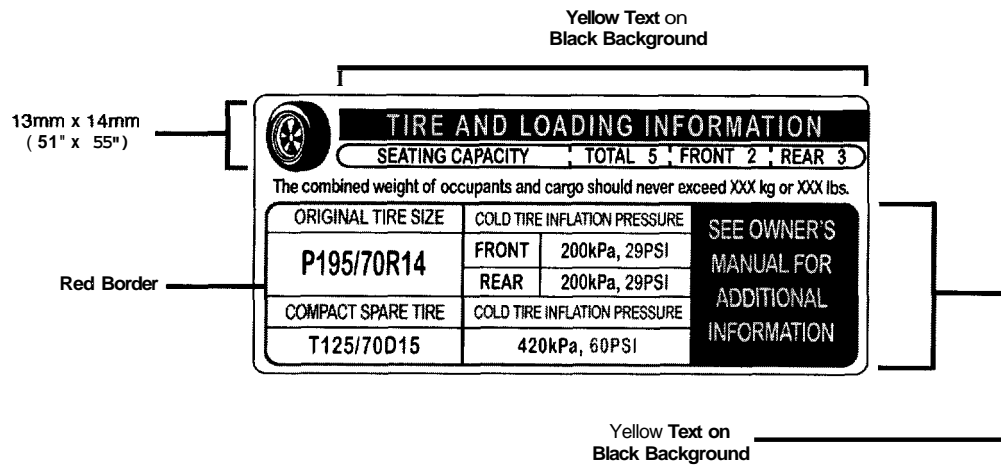


Figure 1.

Tire Inflation Pressure Label

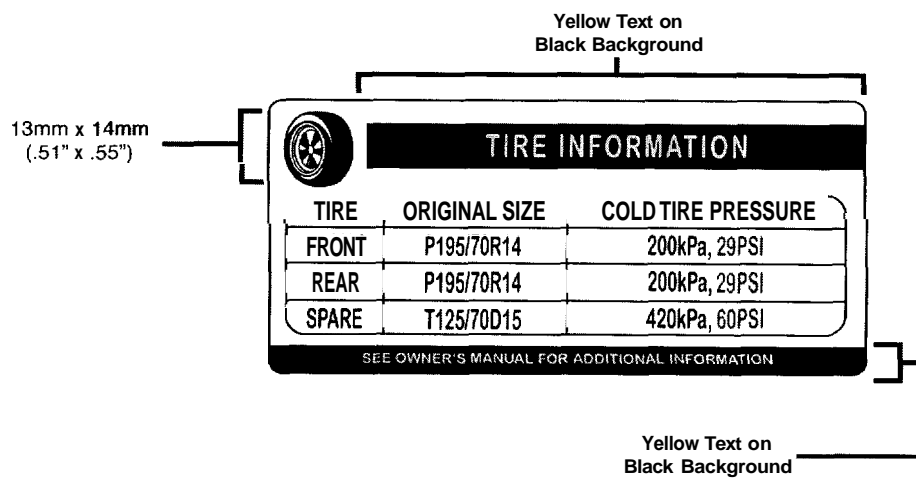


Figure 2.